

WE CLAIM:

1. A method for information dissemination in a wireless mobile ad hoc network comprising:
 - 5 receiving a request to communicate information from a source node to a destination;
identifying each neighbor node of an ad hoc network;
invoking a proactive border node broadcast protocol at the source node when the destination is a neighbor node and wherein the number of hops to
10 the destination is less than a predetermined number of hops;
invoking an on-demand border node broadcast protocol at the source node when the number of hops from the source node to the destination exceeds the predetermined number; and
communicating the information from the source node based on the
15 invoked broadcast protocol.
2. The method of claim 1 wherein identifying each local node comprises:
 - polling each neighbor node for position information;
receiving position information from each neighbor node responsive
20 to the poll; and
generating a neighbor node table identifying the location of each neighbor node.

3. The method of claim 1 wherein communicating the information based on the invoked border node broadcast protocol comprises:
 - selecting at least one neighbor node as a border node based on a
5 geographic location of the neighbor node and geometric criteria;
broadcasting the information from the source node; and
wherein the broadcast information identifies the selected at least
one border node and a communication destination.
4. The method of claim 3 further comprising:
 - 10 receiving the broadcast information at the selected border node;
invoking a border node broadcast protocol at the border node; and
rebroadcasting the received information from the border node to the
destination based on the invoked border node broadcast protocol.
5. The method of claim 1 wherein the predetermined number of hops
15 is selectable.
6. The method of claim 3 wherein selecting at least one neighbor
node as a border node based on a geographic location of the neighbor node and
geometric criteria comprises:
 - 20 determining at least one neighbor node having both a maximum
distance from the source node and a minimum distance to a one of the compass
point directions North, South, East and West.
7. The method of claim 6 wherein at least one border node is selected
for each compass point direction North, South, East and West.

8. The method of claim 1 wherein communicating the information based on the on-demand border node broadcast protocol comprises:

generating a destination query message;

5 selecting at least one neighbor node as a border node based on a geographic location of the neighbor node and geometric criteria; and,

broadcasting the information from the source node

wherein the information identifies the at least one selected neighbor node and the destination query message.

10 9. The method of claim 8 wherein the destination query message is a route request message for on-demand topology-based routing protocols.

10. The method of claim 8 wherein selecting at least one neighbor node as a border node based on a geographic location of the neighbor node and geometric criteria comprises:

15 determining at least one neighbor node having both a maximum distance from the source node and a minimum distance to a one of the compass point directions North, South, East and West.

11. The method of claim 10 wherein at least one border node is selected for each compass point direction North, South, East and West.

20

12. A computer readable medium storing a computer program comprising:

- 5 computer readable code for determining a request to communicate information between a source node and a destination;
- computer readable code for identifying each neighbor node of an ad hoc network;
- computer readable code for invoking a proactive border node broadcast protocol at the source node when the destination is a neighbor node and wherein the number of hops to the destination is less than a predetermined number of hops;
- 10 computer readable code for invoking an on-demand border node broadcast protocol at the source node when the number of hops from the source node to the destination exceeds the predetermined number; and
- 15 computer readable code for directing the communication of the message from the source node based on the invoked broadcast protocol.

13. The computer readable medium of claim 12 wherein computer readable code for identifying each neighbor node of an ad hoc network comprises:

- 20 computer readable code for polling the local zone for position information for each neighbor node; and,
- computer readable code for generating a neighbor node table identifying the location of each neighbor from position data received from each neighbor node responsive to the poll.

25

14. The computer readable code of claim 12 wherein code for directing the communication of information from the source node based on the border node broadcast protocol comprises:

5 computer readable code for selecting at least one neighbor node as a border node based on a geographic location of the neighbor node and geometric criteria;

computer readable code instructing the information to be broadcast from the source node; and

10 wherein the information identifies the selected at least one border node and a communication destination.

15 15. The computer readable medium of claim 14 further comprising: computer readable code for receiving the broadcast information at the selected border node;

16 computer readable code for invoking a border node broadcast protocol at the border node; and

computer readable code for rebroadcasting the received information from the border node to the destination based on the invoked border node broadcast protocol.

20 16. The computer readable medium of claim 12 wherein code for selecting at least one border node comprises:

computer readable code for determining at least one neighbor node having both a maximum distance from the source node and a minimum distance to one of the compass point directions North, South, East and West.

25

17. The computer readable medium of claim 12 wherein computer readable code for invoking an on-demand border node broadcast protocol at the source node when the number of hops from the source node to the destination
5 exceeds the predetermined number comprises:
computer readable code for generating a destination query message;
computer readable code for selecting at least one neighbor node as a border node based on a geographic location of the neighbor node and
10 geometric criteria; and
computer readable code instructing the information to be broadcast from the source node wherein the information identifies the at least one selected neighbor node and the destination query message.

18. The computer readable medium of claim 17 wherein code for
15 selecting at least one border node comprises:
computer readable code for determining at least one neighbor node having both a maximum distance from the source node and a minimum distance to a one of the compass point directions North, South, East and West.

19. The computer readable medium of claim 18 further comprising
20 code for selecting at least one border node for each compass point direction North, South, East and West.

20. A system for information dissemination in a wireless mobile ad hoc network comprising:

means for determining a request to communicate a message from a source node to a destination node;

5 means for identifying each neighbor node of an ad hoc network;

means for invoking a proactive border node broadcast protocol at the source node when the destination is a neighbor node and wherein the number of hops to the destination is less than a predetermined number of hops;

10 means for invoking an on-demand border node broadcast protocol at the source node when the number of hops from the source node to the destination exceeds the predetermined number; and

means for communicating the message from the source node based on the invoked broadcast protocol.